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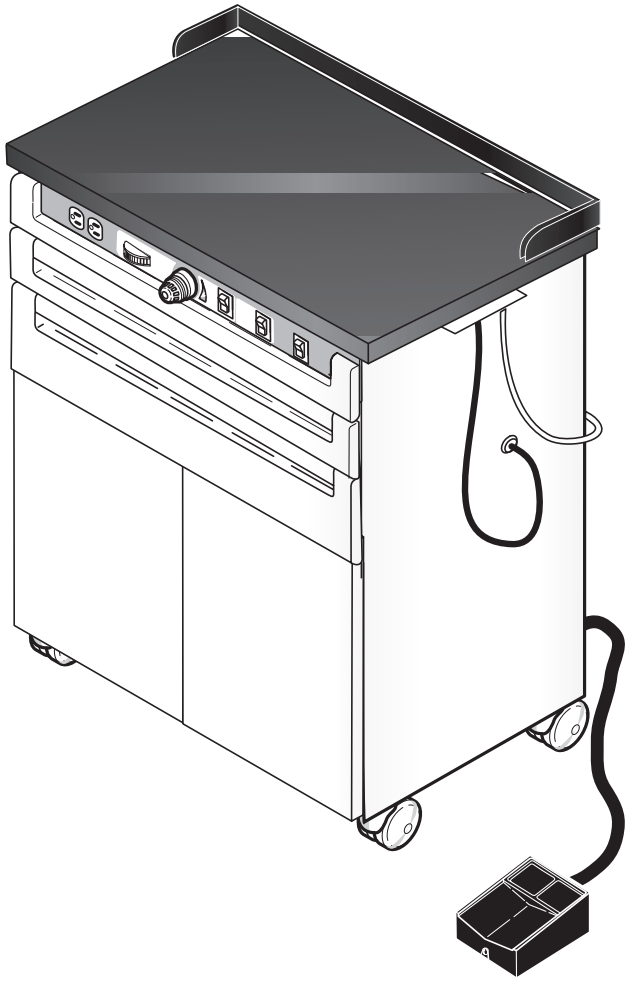
398 -001

Ritter® by MIDMARK

Power Procedure Cart

Service and Parts Manual

Serial Number Prefix:
JT



398 -001

FOR USE BY MIDMARK
TRAINED TECHNICIANS ONLY

Part No. 004-0064-00 Rev. D (1/01/04)

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IMPORTANT INSTRUCTIONS

General Safety Instructions

Safety First: The primary concern of Midmark Corporation is that this unit is maintained with the safety of the patient and staff in mind. To assure that services and repairs are completed safely and correctly, proceed as follows:

(1) Read this entire manual before performing any services or repairs on this unit.

(2) Be sure you understand the instructions contained in this manual before attempting to service or repair this unit.

Warnings

Throughout this manual are Note, Caution, and Danger paragraphs that call attention to particular procedures. These items are used as follows:

NOTE
A note is used to amplify an operating procedure, practice or condition.

CAUTION
A CAUTION is used for an operating procedure, practice, or condition which, if not correctly followed, could result in equipment damage.

DANGER
A DANGER is used for an operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

Danger warnings are repeated here. Become thoroughly familiar with the danger warnings and observe them at all times.

- Refer to the Operator Manual for complete instructions on operating the unit. Failure to do so could result in severe personal injury.

- Always disconnect the power cord from the outlet before removing any of the unit's covers/panels or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

Warranty Instructions

Refer to the Midmark "Limited Warranty" printed on the back cover of the Installation and Operation Manual for warranty information. Failure to follow the guidelines listed below will void the warranty and/or render the Power Procedures Center unsafe for operation.

- In the event of a malfunction, do not attempt to operate the Power Procedures Center until necessary repairs have been made.

- Do not attempt to disassemble Power Procedures Center, replace malfunctioning or damaged components, or perform adjustments unless you are one of Midmark's authorized service technicians.

- Do not substitute parts of another manufacturer when replacing inoperative or damaged components. Use only Midmark replacement parts.

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SECTION I
GENERAL INFORMATION

1.1 Scope of Manual

This manual contains detailed troubleshooting, scheduled maintenance, maintenance, and service instructions for the 398 Power Procedures Center unit. This manual is intended to be used by Midmark's authorized service technicians.

1.2 How to Use Manual

A. Manual Use When Performing Scheduled Maintenance.

(1) Perform inspections and services listed in Scheduled Maintenance Chart (Refer to para 3.1).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance/service instructions (Refer to para 4.1).

B. Manual Use When Unit Is Malfunctioning And Cause Is Unknown.

(1) Perform an operational test on unit (Refer to para 2.1).

(2) Perform troubleshooting procedures listed in Troubleshooting Guide (Refer to para 2.2).

(3) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance/service instructions (Refer to para 4.1).

C. Manual Use When Damaged Component Is Known.

(1) Replace or adjust component in accordance with maintenance/service instructions (Refer to para 4.1).

1.3 Description Of Power Procedures Center

A. General Description (See Figure 1-1).

The 398 Power Procedures Center is designed to provide storage space, hold instruments, and provide strong aspiration (suction) and adjustable pressure. The major components of the unit consist of a small drawer assembly, large drawer assembly, POWER ON/STANDBY switch, VACUUM ON/OFF switch, PRESSURE ON/OFF switch, regulator, pressure gauge, front receptacle, rear receptacle, VACUUM/PRESSURE foot switch, pressure pump assembly, and a vacuum pump assembly.

B. Theory of Operation (See Figure 5-1).

Power potential is supplied to the POWER ON/STANDBY switch and the rear receptacle when the power cord is plugged in. The rear receptacle circuit is complete at this time and is supplying 115 VAC at the receptacle outlet. If the POWER ON/STANDBY switch is switched to "STANDBY", no power potential or ground potential is being provided to the rest of the unit's circuits. When the POWER ON/STANDBY switch is switched to "ON", power potential is supplied to the front receptacle. The front receptacle circuit is complete at this time and is supplying 115 VAC at the receptacle outlet. Also, when the POWER ON/STANDBY switch is switched to "ON", power potential is supplied to the pressure pump assembly and the vacuum pump assembly, and ground potential is supplied to the PRESSURE ON/OFF switch, the VACUUM ON/OFF switch, and the VACUUM/PRESSURE foot switch. If the PRESSURE ON/OFF switch is switched to "ON" at this time or if the VACUUM/PRESSURE foot switch is depressed to "PRESSURE", power is applied across the pressure pump assembly, causing the pump to operate. If the VACUUM ON/OFF switch is switched to "ON" at this time or if the VACUUM/PRESSURE foot switch is depressed to "VACUUM", power is applied across the vacuum pump assembly, causing the pump to operate. The POWER ON/STANDBY switch, PRESSURE ON/OFF switch, and VACUUM ON/OFF each have a lamp in the switch. Power potential is supplied to these lamps through separate power leads. When the switches are switched to "ON", power is applied across the lamp, causing the switch lamp to illuminate, thereby showing it is in the "ON" position.

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SECTION I
GENERAL INFORMATION

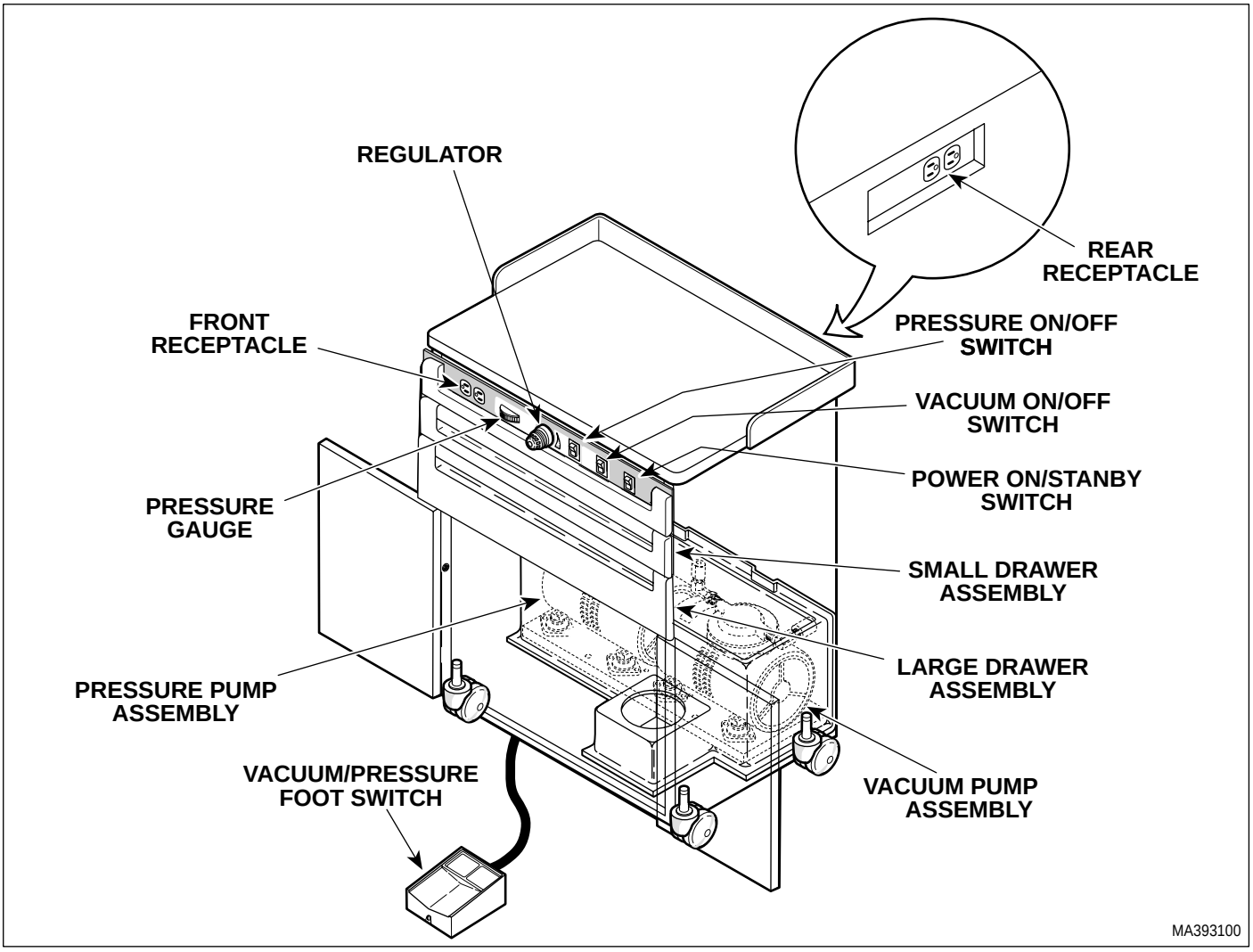

Figure 1-1. Major Components

1.4 SPECIFICATIONS

Factual data for the Power Procedures Center is provided in Table 1-1.

Table 1-1. Specifications

Description	Data
Dimensions (overall):	
Length	21.15 in (64.1 cm)
Width (depth)	18.06 in (46.1 cm)
Height	34.10 in (86.9 cm)
Shipping Carton	34 in x 23 in x 46 in (86.4 cm x 58.4 cm x 116.8 cm)
Weight:	
Empty	148 lb (67.1 kg)
With Shipping Carton	160 lb (72.6 kg)
Electrical Requirements (max)	115 VAC, 60 HZ, 12 amp, single phase
Recommended Circuit:	A separate (dedicated) circuit is recommended for this unit. The unit should not be connected into an electrical circuit with other appliances or equipment, unless the circuit is rated for the additional load.

Table 1-1. Specifications - Continued

Description	Data
Power Consumption:	205 WATTS, 3.15 amps @ 115 VAC
Vacuum Pump (max vacuum)	20 inches (50.8 cm) Hg. Flow rate: 1.55 SCFM @ 0 PSIG
Pressure Pump (max pressure)	45 PSIG Flow rate: 1.15 SCFM @ 0 PSIG

1.5 Parts Replacement Ordering

If a part replacement is required, order the part directly from the factory as follows:

(1) Refer to Figure 1-2 to determine the location of the model number (A) and serial number (B) of the unit and record this data.

(2) Refer to the Parts List to determine the item numbers of the parts, part numbers of the parts, descriptions of the parts, and quantities of parts needed and record this data (Refer to para 6.1).

NOTE
Ask the Purchasing Department of the company that owns the unit for this information. Otherwise, this information may be obtained from the dealer that sold the unit.

(3) Determine the installation date of the unit and record this data.

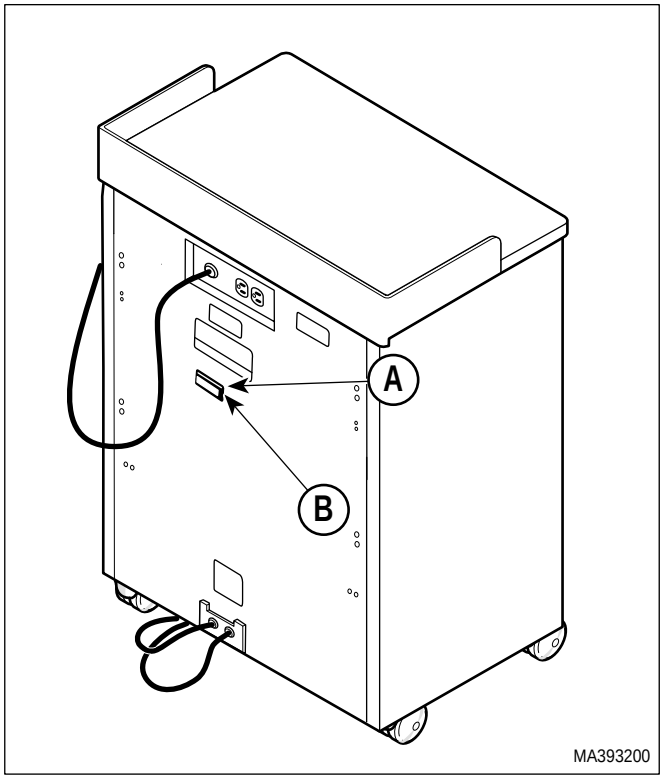

Figure 1-2. Model Number / Serial Number Location

(4) Call Midmark with the recorded information and ask for the Medical Technical Service Department (See back cover of this manual for the phone number or use the Fax Order Form (See page 7-2).

1.6 Special Tools

Table 1-2 lists all of the special tools needed to repair the unit, how to obtain the special tools, and the purpose of each special tool.

Table 1-2. Special Tool List

Description of Special Tool	Manufacturer's Name / Address / Phone	Manufacturer's Part Number	Purpose of Special Tool
Multimeter	Commercially Available	Any Type	Used to perform continuity and voltage checks.

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SECTION II
TESTING AND TROUBLESHOOTING

2.1 Operational Test

In order to effectively diagnose the malfunction of the unit, it may be necessary to perform an operational test as follows:

DANGER
Refer to the Operator Manual for complete instructions on operating the unit. Failure to do so could result in severe personal injury.

(1) Plug the unit into a properly grounded receptacle, capable of supplying correct and adequate power to operate this unit.

(2) Using a multimeter, check the rear receptacle (See Figure 2-1). The reading should be approximately 115 VAC.

(3) Switch the POWER ON/STANDBY switch to "ON".

(4) Observe. The POWER ON/STANDBY switch should illuminate.

(5) Using a multimeter, check the front receptacle. The reading should be approximately 115 VAC.

(6) Switch the VACUUM ON/OFF switch to "ON".

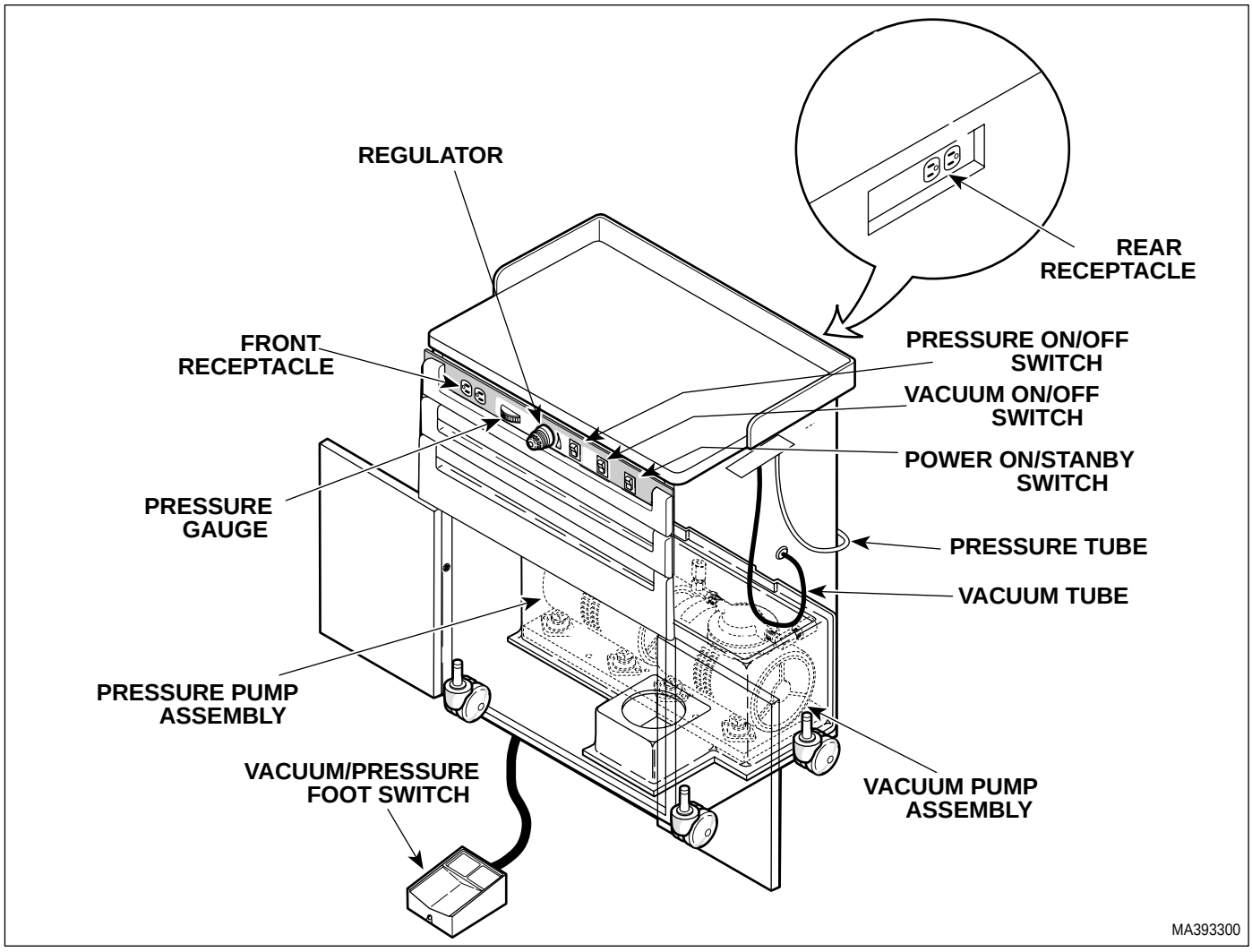

Figure 2-1. Operational Test

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SECTION II
TESTING AND TROUBLESHOOTING

(7) Observe. The VACUUM ON/OFF switch should illuminate and the vacuum pump assembly should run.

(8) Check the suction at the end of the vacuum tube to verify that it is normal.

(9) Switch the VACUUM ON/OFF switch to "OFF".

(10) Depress the VACUUM/PRESSURE foot switch pedal to "VACUUM".

(11) Observe. The vacuum pump assembly should run.

(12) Release the VACUUM/PRESSURE foot switch pedal.

(13) Switch the PRESSURE ON/OFF switch to "ON".

(14) Observe. The PRESSURE ON/OFF switch should illuminate and the pressure pump assembly should run.

(15) Read the pressure gauge reading. The reading should be 35-50 PSIG when the regulator is fully opened and the end of the pressure tube is closed off.

(16) Check the pressure at the end of the pressure tube to verify that it is normal.

(17) Switch the PRESSURE ON/OFF switch to "OFF".

(18) Depress the VACUUM/PRESSURE foot switch pedal to "PRESSURE".

(19) Observe. The pressure pump assembly should run.

(20) Release the VACUUM/PRESSURE foot switch pedal.

(21) Switch the POWER ON/STANDBY switch to "STANDBY".

(22) If the unit does not operate correctly as described in steps (1) thru (21), replace the malfunctioning component(s) as necessary to correct the problem. If necessary, refer to Table 2-1, Troubleshooting Guide, to determine the exact cause of the malfunction.

2.2 Troubleshooting Procedures

Table 2-1 is a Troubleshooting Guide which is used to determine the cause of the malfunction.

Table 2-1. Troubleshooting Guide

Problem	Symptom	Probable Cause	Check	Correction
Unit will not operate/seems powerless.	POWER ON/STANDBY switch does not illuminate and/or vacuum pump assembly and pressure pump assembly will not run.	Unit not plugged into a wall receptacle.	Check to see if unit is plugged into wall receptacle.	Plug unit into wall receptacle.
		Circuit breaker for wall receptacle is tripped.	Check to see if circuit breaker for wall receptacle is tripped.	If circuit breaker is tripped, determine what caused the circuit breaker to trip, correct the problem, and then re-set/replace the circuit breaker.
		Wire connections loose.	Check all wiring connections from power cord to POWER ON/STANDBY switch.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		POWER ON/STANDBY switch is malfunctioning.	Perform continuity check on POWER ON/STANDBY switch.	Replace POWER ON/STANDBY switch. Refer to para 4.3.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Unit will not operate / seems powerless - Continued.	Rear receptacle does not have power.	Unit not plugged into a wall receptacle.	Check that unit is plugged into wall receptacle.	Plug unit into wall receptacle.
		Circuit breaker for wall receptacle is tripped.	Check to see if circuit breaker for wall receptacle is tripped.	If circuit breaker is tripped, determine what is plugged into the rear receptacle that caused the circuit breaker to trip, correct the problem, and then re-set/replace the circuit breaker.
		Wire connections loose.	Check all wiring connections from power cord to rear receptacle.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Rear receptacle is malfunctioning.	Replace suspect rear receptacle with known working receptacle.	Replace rear receptacle. Refer to para 4.9.
Vacuum pump assembly is malfunctioning.	Vacuum pump assembly will not run.	Wire connections loose.	Check all wiring connections from POWER ON/STANDBY switch to vacuum pump assembly, VACUUM ON/OFF switch, and VACUUM/PRESSURE foot switch.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Automatic thermal reset switch activated.	–	Wait for a period of time to allow pump motor to cool.
		VACUUM ON / OFF switch is malfunctioning.	Perform continuity check on VACUUM ON/OFF switch.	Replace VACUUM ON / OFF switch. Refer to para 4.4.
		VACUUM / PRESSURE foot switch is malfunctioning.	Perform continuity check on VACUUM / PRESSURE foot switch.	Replace VACUUM / PRESSURE foot switch.
		Vacuum pump assembly is malfunctioning.	Replace suspect vacuum pump assembly with known working vacuum pump assembly.	Replace vacuum pump assembly. Refer to para 4.12.
	Vacuum pump assembly runs, but will not develop proper vacuum.	Vacuum tubing is dirty, clogged, cracked, or has other damage.	Check tubing for dirt, clogging, cracks, or other obvious damage.	Replace cracked or damaged tubing.
		Tubing is not being held tightly by elbows and connectors.	Run vacuum pump assembly and check for air leaks. Pull gently on tubing to check integrity of connections.	Push tube firmly into release ring of elbow or connector. Replace damaged elbow or connector.
		Vacuum bottle is full, dirty, clogged, or has other damage which does not allow it to remain airtight.	Check vacuum bottle to see if it is full. Check vacuum bottle for dirt, clogging, or other obvious damage.	Replace vacuum bottle.
		Vacuum pump assembly is malfunctioning.	Replace suspect vacuum pump assembly with known working vacuum pump assembly.	Replace vacuum pump assembly. Refer to para 4.12.

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SECTION II
TESTING AND TROUBLESHOOTING

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Pressure pump assembly is malfunctioning.	Pressure pump assembly will not run.	Wire connections loose. .	Check all wiring connections from POWER ON / STANDBY switch to pressure pump assembly, PRESSURE ON/OFF switch, and VACUUM / PRESSURE foot switch.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Automatic thermal reset switch activated.	–	Wait for a period of time to allow pump motor to cool.
		PRESSURE ON/OFF switch is malfunctioning.	Perform continuity check on PRESSURE ON/OFF switch.	Replace PRESSURE ON/OFF switch. Refer to para 4.5.
		VACUUM / PRESSURE foot switch is malfunctioning.	Perform continuity check on VACUUM / PRESSURE foot switch.	Replace VACUUM / PRESSURE foot switch.
		Pressure pump assembly is malfunctioning.	Replace suspect pressure pump assembly with known working pressure pump assembly.	Replace pressure pump assembly. Refer to para 4.11.
	Pressure pump assembly runs, but will not develop proper pressure.	Pressure tubing is dirty, clogged, cracked, or has other obvious damage.	Check tubing for dirt, clogging, cracks, or other obvious damage.	Clean dirty or clogged tubing. Replace cracked or damaged tubing.
		Tubing is not being held tightly by elbows and connectors.	Run pressure pump assembly and check for air leaks. Pull gently on tubing to check integrity of connections.	Push tube firmly into release ring of elbow or connector. Replace damaged elbow or connector.
		Regulator is malfunctioning.	Replace suspect regulator with known working regulator.	Replace regulator. Refer to para 4.6.
		Pressure pump assembly is malfunctioning.	Replace suspect pressure pump assembly with known working pressure pump assembly.	Replace pressure pump assembly. Refer to para 4.11.
Pressure will not adjust properly.	Pressure changes slowly or not at all.	Pressure tubing is dirty, clogged, cracked, or has other obvious damage.	Check tubing for dirt, clogging, cracks, or other obvious damage.	Clean dirty or clogged tubing. Replace cracked or damaged tubing.
		Tubing is not being held tightly by elbows and connectors.	Run vacuum pump assembly and check for air leaks. Pull gently on tubing to check integrity of connections.	Push tube firmly into release ring of elbow or connector. Replace damaged elbow or connector.
		Regulator is malfunctioning.	Replace suspect regulator with known working regulator.	Replace regulator. Refer to para 4.6.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Pressure will not adjust properly - Continued.	Pressure changes, but pressure gauge reading doesn't change or changes erratically. NOTE: There must be an instrument attached to the end of the pressure tube providing back pressure, for a reading to register on pressure gauge.	Pressure tubing is dirty, clogged, cracked, or has other obvious damage.	Check tubing for dirt, clogging, cracks, or other obvious damage.	Replace cracked or damaged tubing. Gain access to tubing using para 4.2.
		Pressure gauge is malfunctioning.	Replace suspect pressure gauge with known working pressure gauge.	Replace pressure gauge. Refer to para 4.7.
Front receptacle does not have power.	Front receptacle does not have power.	Front receptacle is malfunctioning.	Replace suspect front receptacle with known working receptacle.	Replace front receptacle. Refer to para 4.8.
		POWER ON/STANDBY switch is switched "OFF".	See if POWER ON/STANDBY switch is switched "OFF"	Switch POWER ON/STANDBY switch "ON".
POWER ON/STANDBY switch does not illuminate when switched "ON".	Unit works fine, but POWER ON/STANDBY switch will not illuminate when switched "ON".	POWER ON/STANDBY switch is malfunctioning.	Check that unit works, but POWER ON/STANDBY switch does not illuminate when switched "ON".	Replace POWER ON/STANDBY switch. Refer to para 4.3.
PRESSURE ON/OFF switch does not illuminate when switched "ON".	Unit works fine, but PRESSURE ON/OFF switch will not illuminate when switched "ON".	Wire connection to terminal 3 of PRESSURE ON/OFF switch is loose.	Check PRESSURE ON/OFF switch terminal 3 connections.	Clean dirty connections. Tighten any loose connections. Replace any damaged connections.
		PRESSURE ON/OFF switch is malfunctioning.	Check that unit works, but switch does not illuminate, when PRESSURE ON/OFF switch is switched "ON".	Replace PRESSURE ON/OFF switch. Refer to para 4.5.
VACUUM ON/OFF switch does not illuminate when switched "ON".	Unit works fine, but VACUUM ON/OFF switch will not illuminate when switched "ON".	Wire connection to terminal 3 of VACUUM ON/OFF switch is loose.	Check VACUUM ON/OFF switch terminal 3 connections.	Clean dirty connections. Tighten any loose connections. Replace any damaged connections.
		VACUUM ON/OFF switch is malfunctioning.	Check that unit works, but VACUUM ON/OFF switch does not illuminate, when switched "ON".	Replace VACUUM ON/OFF switch. Refer to para 4.4.

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SECTION III
SCHEDULED MAINTENANCE

3.1 Scheduled Maintenance

Table 3-1 is a Scheduled Maintenance Chart which lists the inspections and services that should be performed periodically on the unit. These inspections and services should be performed as often as indicated in the chart.

Table 3-1. Scheduled Maintenance Chart

Interval	Inspection or Service	What to Do
Semi-annually	Obvious damage	Visually check condition of unit for obvious damage such as: cracks in components, missing components, dents in components, leaks, or any other visible damage which would cause unit to be unsafe to operate or would compromise the performance of the unit. Repair unit if necessary.
	Fasteners/hardware	Check unit for missing or loose fasteners/hardware. Replace any missing hardware and tighten any loose hardware as necessary.
	Top, back splash, doors, and drawers	Use a soap and water solution to remove dirt and stains. For tougher stains, a standard household cleaner may be used.
	Warning and instructional decals	Check for missing or illegible decals. Replace decals as necessary.
	Control decal	Check for missing, damaged, or illegible control decal. Replace control decal if necessary. Refer to para 4.10.
	Wiring connections	Check the integrity of all wiring connections. Clean all dirty connections. Tighten any loose connections. Replace any damaged connections.
	Free movement of door hinges	Clean door hinges. If necessary, lubricate door hinges with Silicon based lubricant.
	Free movement of drawer assemblies	Clean drawer assembly guides and ball bearings. If necessary, lubricate drawer assembly guides and ball bearings with Silicon based lubricant.
	Tubing	Remove tubing and inspect for buildup or obvious damage. Clean, drain, and flush tubing. Replace tubing if necessary. Check tubing connections for leaks. Push end of tubes firmly into release rings of connectors and elbows. Gain access to tubing using para 4.2.
	Bubble mounts	Check bubble mounts for torn, ripped, cracked, or damaged rubber. Replace bubble mounts as necessary.
	Operational Test	Perform an Operational Test to determine if the unit is operating within its specifications (Refer to para 2-1). Replace any malfunctioning components.

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SECTION IV
MAINTENANCE / SERVICE INSTRUCTIONS

4.1 Introduction

DANGER
Always disconnect the power cord from the outlet before removing any of the unit covers/panels or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in serious personal injury or death.

The following paragraphs contain replacement and repair procedures for the unit.

4.2 Cabinet Top Cover Removal / Installation

A. Removal

(1) Disconnect the power cord from the outlet.

(2) Remove two screws (1, Figure 4-1) from cabinet top cover (2).

(3) Slide cabinet top cover (2) towards the back of the unit until the brackets (A) are clear of the front lip (B) of the cabinet weldment (3).

B. Installation

(1) Install cabinet top cover (2) on rear portion cabinet weldment (3).

(2) Slide the cover (2) forward making sure the brackets (A) are engaged onto the front lip (B) of the cabinet weldment (3).

(3) Secure cabinet top cover (2) to rear portion of cabinet weldment (3) with two screws (1).

4.3 POWER ON/STANDBY Switch Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

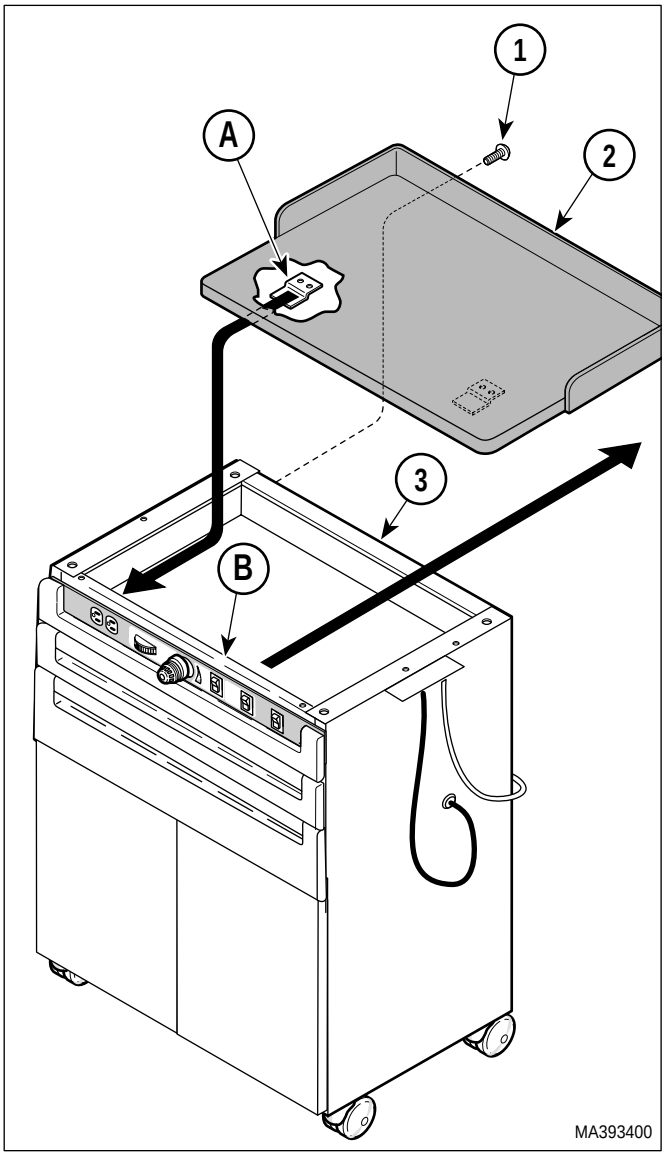

Figure 4-1. Cabinet Top Cover Removal / Installation

(2) Tag and disconnect two wires (1, Figure 4-2) from terminals (2).

(3) Tag and disconnect two wires (3) from terminals (4).

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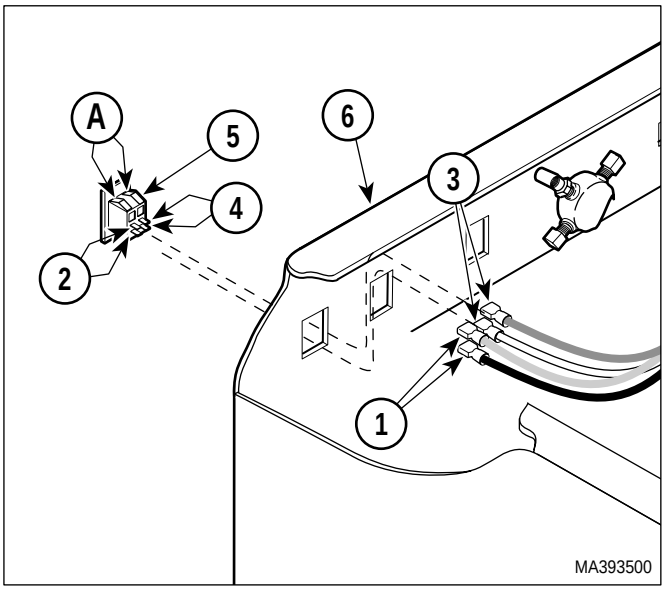

Figure 4-2. POWER ON / STANDBY Switch Removal / Installation

(4) Press four tabs (A) of POWER ON/STANDBY switch (5) inward simultaneously, and push POWER ON/STANDBY switch out of cabinet weldment (6).

B. Installation

(1) Install POWER ON/STANDBY switch (5) in cabinet weldment (6) by pushing firmly until switch “pops” into place.

(2) Connect two wires (3) to terminals (4).

(3) Connect two wires (1) to terminals (2).

(4) Install control box cover (Refer to para 4.1).

4.4 VACUUM ON / OFF Switch Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) Tag and disconnect three wires (1, Figure 4-3) from terminals (2).

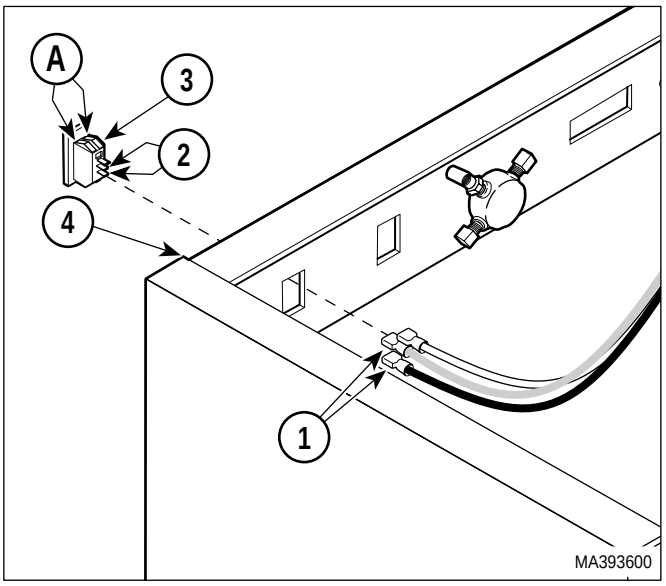

Figure 4-3. VACUUM ON / OFF Switch Removal / Installation

(3) Press four tabs (A) of VACUUM ON/OFF switch (3) inward simultaneously, and push VACUUM ON/OFF switch out of cabinet weldment (4).

B. Installation

(1) Install VACUUM ON/OFF switch (3) in cabinet weldment (4) by pushing firmly until switch “pops” into place.

(2) Connect three wires (1) to terminals (2).

(3) Install control box cover (Refer to para 4.1).

4.5 PRESSURE ON / OFF Switch Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) Tag and disconnect three wires (1, Figure 4-4) from terminals (2).

(3) Press four tabs (A) of PRESSURE ON/OFF switch (3) inward simultaneously, and push PRESSURE ON/OFF switch out of cabinet weldment (4).

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B. Installation

(1) Install PRESSURE ON/OFF switch (3) in cabinet weldment (4) by pushing firmly until switch “pops” into place.

(2) Connect three wires (1) to terminals (2).

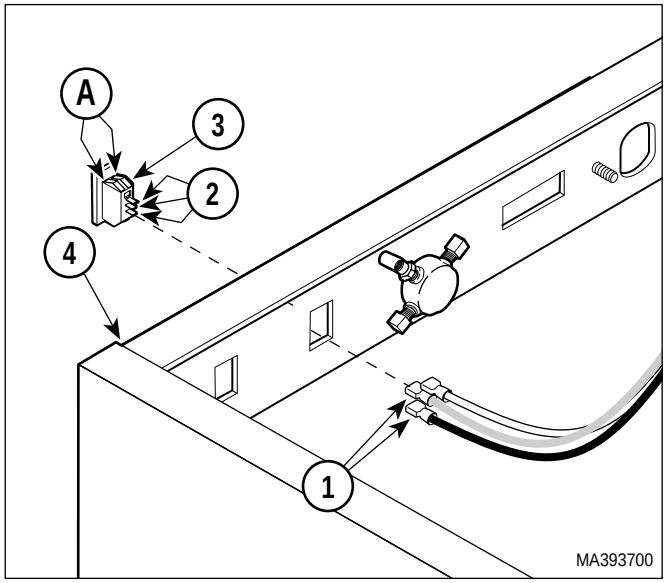

Figure 4-4. PRESSURE ON / OFF Switch Removal / Installation

(3) Install control box cover (Refer to para 4.1).

4.6 Regulator Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) On newer units, loosen setscrew (1, Figure 4-5).

(3) Remove panel mount nut (2) from regulator (3).

(4) Push regulator (3) out of cabinet weldment (4).

(5) Push in on release ring (A) of connector (6) while simultaneously pulling tube (5) from connector. Repeat this step for the other tube (5).

(6) Remove two connectors (6) from elbows (7).

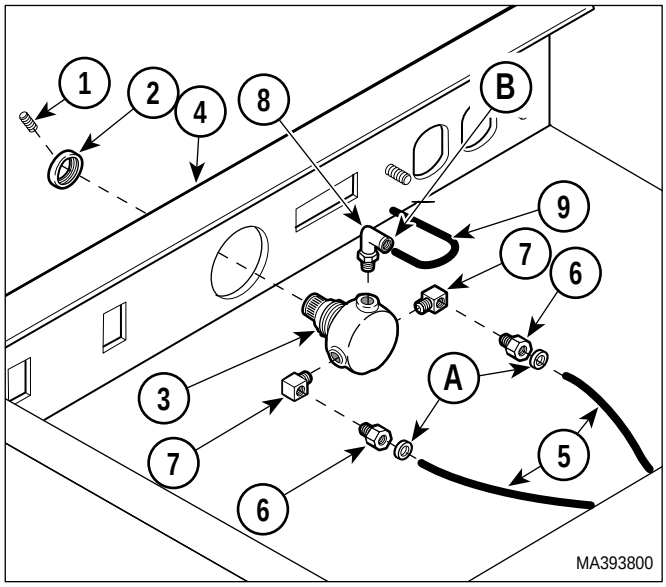

Figure 4-5. Regulator Removal / Installation

(7) Remove two elbows (7) from regulator (3).

(8) Push in on release ring (B) of elbow (8) while simultaneously pulling tube (9) from elbow.

(9) Remove elbow (8) from regulator (3).

B. Installation

(1) Coat threads of elbow (8) with pipe thread sealant.

NOTE
Elbow must be installed so the elbow opening faces toward the rear of the regulator. This is necessary to connect the tube to the elbow.

(2) Install elbow (8) on regulator (3).

(3) Push end of tube (9) firmly into release ring (B) on elbow (8).

(4) Coat threads of two elbows (7) with pipe thread sealant.

NOTE
Elbows must be installed so the elbow openings face toward the rear of the regulator. This is necessary to connect the tubes to the elbows.

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(5) Install two elbows (7) on regulator (3).

(6) Coat threads of two connectors (6) with pipe thread sealant.

(7) Install two connectors (6) on elbows (7).

(8) Push end of two tubes (5) firmly into release rings (A) of connectors (6).

(9) Position regulator (3) in cabinet weldment (4) and secure with panel mount nut (2).

(10) On newer units, secure panel mount nut (2) in position by tightening setscrew (1).

(11) Install control box cover (Refer to para 4.1).

4.7 Pressure Gauge Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) Remove two nuts (1, Figure 4-6) from studs (2).

CAUTION
Plastic tabs on pressure gauge are brittle. Use caution when removing pressure gauge so tabs do not break.

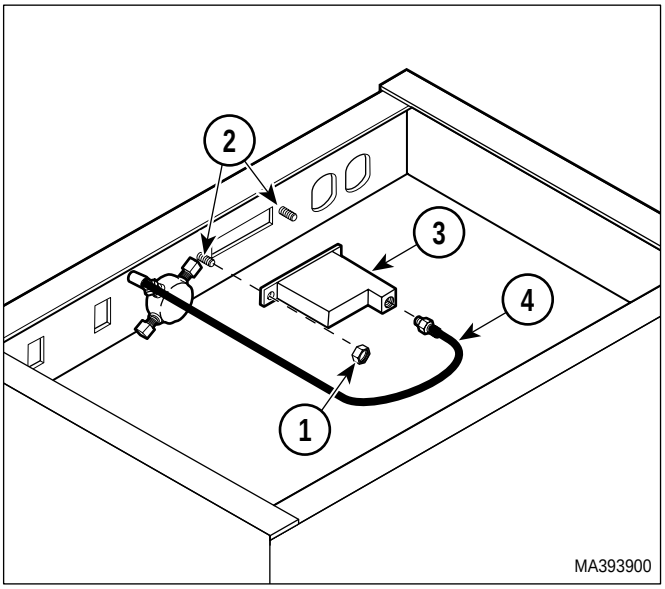

Figure 4-6. Pressure Gauge Removal / Installation

(3) Gently remove pressure gauge (3) from two studs (2).

(4) Disconnect tube (4) from pressure gauge (3).

B. Installation

(1) Connect tube (4) to pressure gauge (3).

CAUTION
Plastic tabs on pressure gauge are brittle. Use caution when installing pressure gauge so tabs do not break.

(2) Install pressure gauge (3) on two studs (2).

(3) Install two nuts (1) on studs (2).

(4) Install control box cover (Refer to para 4.1).

4.8 Front Receptacle Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

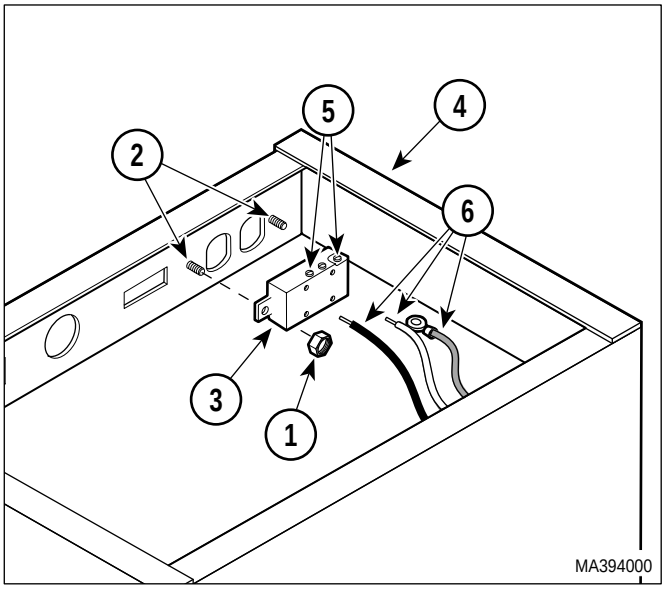

Figure 4-7. Front Receptacle Removal / Installation

NOTE
The front receptacle is different for each export model. Refer to the Parts List and Electrical Schematic/Wiring Diagram to remove and install the front receptacle on an export model.

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(2) Remove two nuts (1, Figure 4-7) from studs (2).

(3) Pull front receptacle (3) from cabinet weldment (4).

(4) Loosen three screws (5); then tag and disconnect three wires (6) from front receptacle (3).

B. Installation

NOTE
Ensure that the two wires without terminals are firmly pinched between the two copper plates after their screws have been tightened. Pull gently on wires to check the integrity of the wiring.

(1) Connect three wires (6) to front receptacle (3) and secure by tightening three screws (5).

(2) Position front receptacle (3) in cabinet weldment (4).

(3) Install two nuts (1) on studs (2).

(4) Install control box cover (Refer to para 4.1).

4.9 Rear Receptacle Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

NOTE
The rear receptacle is different for each export model. Refer to the Parts List and Electrical Schematic/Wiring Diagram to remove and install the rear receptacle on an export model.

(2) Remove two nuts (1, Figure 4-8) and screws (2).

(3) Pull rear receptacle (3) from receptacle panel (4).

(4) Loosen three screws (5); then tag and disconnect three wires (6) from rear receptacle (3).

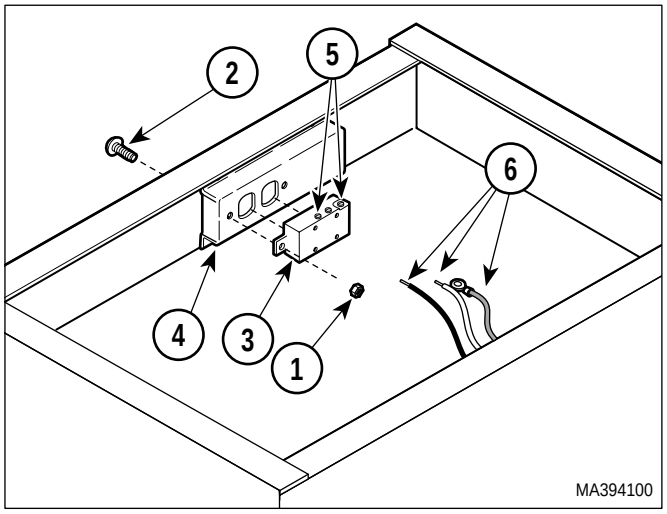

Figure 4-8. Rear Receptacle Removal / Installation

B. Installation

NOTE
Ensure that the two wires without terminals are firmly pinched between the two copper plates after their screws have been tightened. Pull gently on wires to check the integrity of the wiring.

(1) Connect three wires (6) to rear receptacle (3) and secure by tightening three screws (5).

(2) Position rear receptacle (3) in receptacle panel (4) and secure with two screws (2) and nuts (1).

(3) Install control box cover (Refer to para 4.1).

4.10 Control Decal Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) Remove POWER ON/STANDBY switch (Refer to para 4.3).

(3) Remove VACUUM ON/OFF switch (Refer to para 4.4).

(4) Remove PRESSURE ON/OFF switch (Refer to para 4.5).

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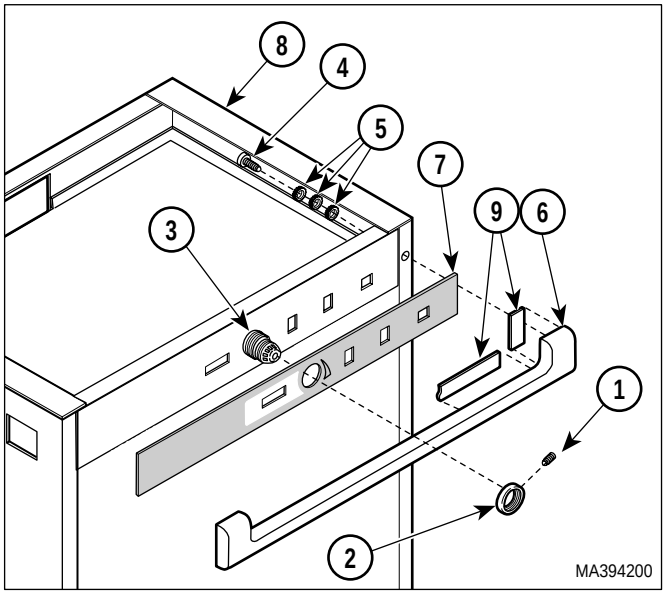

Figure 4-9. Control Decal Removal / Installation

(5) On newer units, loosen setscrew (1, Figure 4-9).

(6) Remove panel mount nut (2) from regulator (3).

NOTE
Starwashers are on early units only. Later units use a different screw which doesn't require starwashers.

(7) Remove two screws (4) and six starwashers (5) from small drawer front (6).

(8) Remove small drawer front (6) and control decal (7) as an assembly from cabinet weldment (8).

(9) Separate small drawer front (6) from control decal (7).

(10) Scrape double sided tape (9) from back side of small drawer front (6).

B. Installation

(1) Install double sided tape (9) on small drawer front (6).

(2) Position control decal (7) on cabinet weldment (8).

NOTE
Starwashers are on early units only. Later units use a different screw which doesn't require starwashers.

(3) Install small drawer front (6) on cabinet weldment (8) and secure with six starwashers (5) and two screws (4).

(4) Install panel mount nut (2) on regulator (3).

(5) On newer units, secure panel mount nut (2) in position by tightening setscrew (1).

(6) Install PRESSURE ON/OFF switch (Refer to para 4.5).

(7) Install VACUUM ON/OFF switch (Refer to para 4.4).

(8) Install POWER ON/STANDBY switch (Refer to para 4.3).

(9) Install control box cover (Refer to para 4.1).

4.11 Pressure Pump Assembly Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) Tag and disconnect two wires (1, Figure 4-10) from terminal block (2).

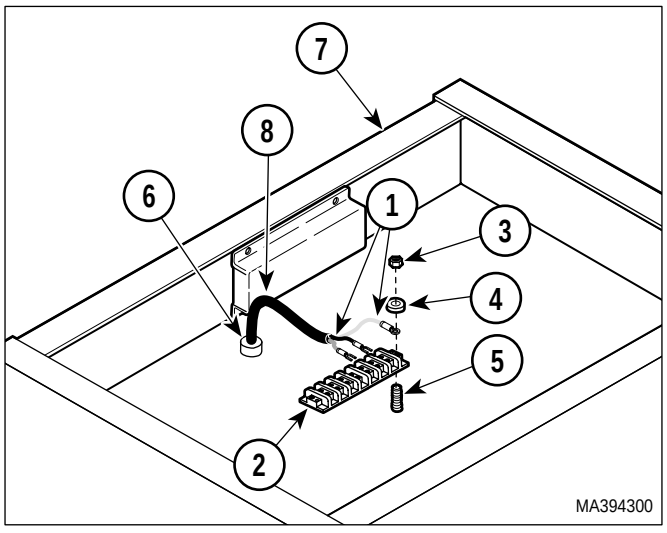

Figure 4-10. Disconnecting / Connecting Pressure Pump Assembly Wire Harness

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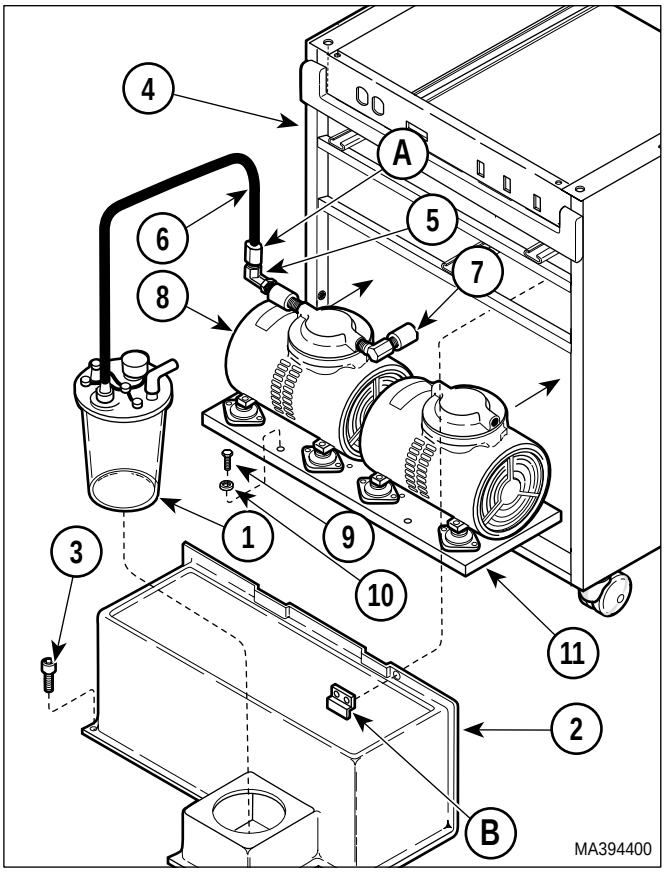

Figure 4-11. Disconnecting / Connecting Pressure Pump Assembly

(3) Remove nut (3); then tag and disconnect wire (4) from ground stud (5).

(4) Remove strain relief bushing (6) from cabinet weldment (7) and wire harness (8).

(5) Pull wire harness (8) down through wire hole in cabinet weldment (7).

(6) Remove vacuum bottle (1, Figure 4-11) from motor cover (2).

(7) Remove two finger screws (3) and motor cover (2) from cabinet weldment (4).

(8) Push in on release ring (A) of elbow (5) while simultaneously pulling tube (6) from elbow.

(9) Remove elbow (5) and exhaust silencer (7) from pressure pump assembly (8).

(10) Remove two screws (9) and washers (10) from motor mount (11).

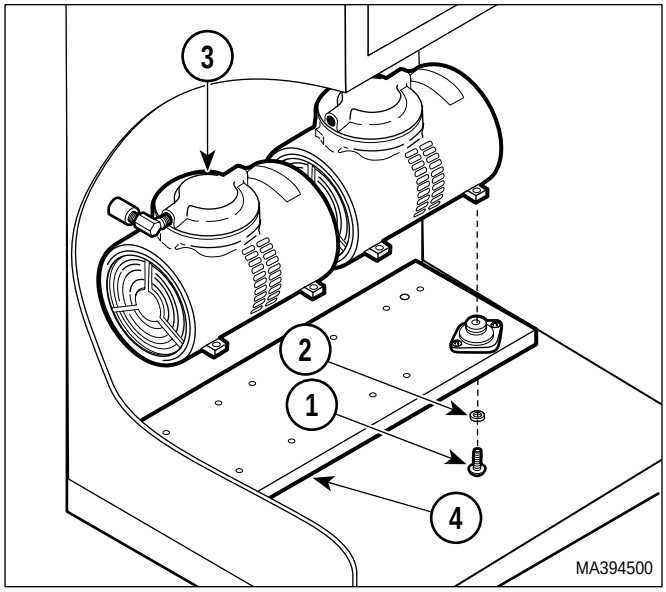

Figure 4-12. Pressure Pump Assembly Removal / Installation

(11) Turn motor mount (11) on its side so the bottom of the motor mount is facing you.

(12) Remove four screws (1, Figure 4-12), lockwashers (2), and pressure pump assembly (3) from motor mount (4).

B. Installation

(1) Position pressure pump assembly (3, Figure 4-12) on motor mount (4) and secure with four lockwashers (2) and screws (1).

(2) Position motor mount (11, Figure 4-11) on cabinet weldment (4) and secure with two washers (10) and screws (9).

(3) Coat threads of elbow (5) and exhaust silencer (7) with pipe thread sealant.

(4) Install elbow (5) and exhaust silencer (7) on pressure pump assembly (8).

(5) Push tube (6) firmly into release ring (A) of elbow (5).

(6) Install motor cover (2) under two flaps (B) on cabinet weldment (4) and secure with two finger screws (3).

(7) Install vacuum bottle (1) in motor cover (2).

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(8) Push wire harness (8, Figure 4-10) up through the wire hole in cabinet weldment (7).

(9) Install strain relief bushing (6) around wire harness (8), and then insert strain relief bushing in wire hole of cabinet weldment (7).

(10) Install wire (4) on ground stud (5) and secure with nut (3).

(11) Connect two wires (1) to terminal block (2).

(12) Install control box cover (Refer to para 4.1).

4.12 Vacuum Pump Assembly Removal / Installation

A. Removal

(1) Remove control box cover (Refer to para 4.1).

(2) Tag and disconnect two wires (1, Figure 4-13) from terminal block (2).

(3) Remove nut (3); then tag and disconnect wire (4) from ground stud (5).

(4) Remove strain relief bushing (6) from cabinet weldment (7) and wire harness (8).

(5) Pull wire harness (8) down through wire hole in cabinet weldment (7).

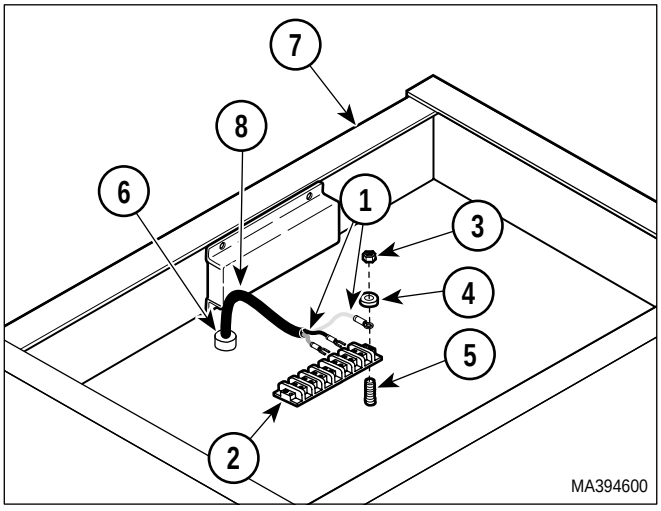

Figure 4-13. Disconnecting / Connecting Vacuum Pump Assembly Wire Harness

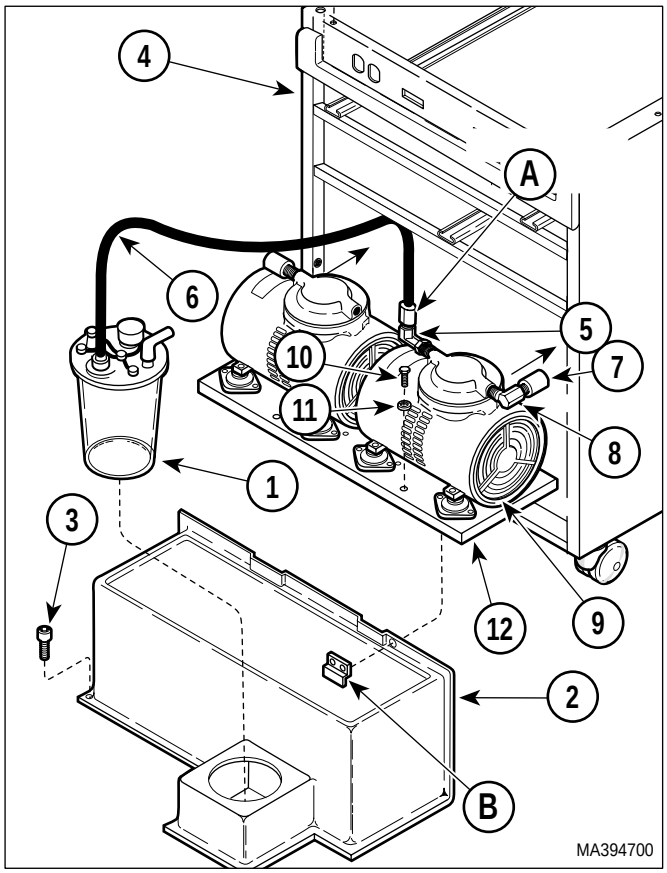

Figure 4-14. Disconnecting / Connecting Vacuum Pump Assembly

(6) Remove vacuum bottle (1, Figure 4-14) from motor cover (2).

(7) Remove two finger screws (3) and motor cover (2) from cabinet weldment (4).

(8) Push in on release ring (A) of elbow (5) while simultaneously pulling tube (6) from elbow.

(9) Remove elbow (5), exhaust silencer (7), and elbow (8) from vacuum pump assembly (9).

(10) Remove two screws (10) and washers (11) from motor mount (12).

(11) Turn motor mount (12) on its side so the bottom of the motor mount is facing you.

(12) Remove four screws (1, Figure 4-15), lockwashers (2), and vacuum pump assembly (3) from motor mount (4).

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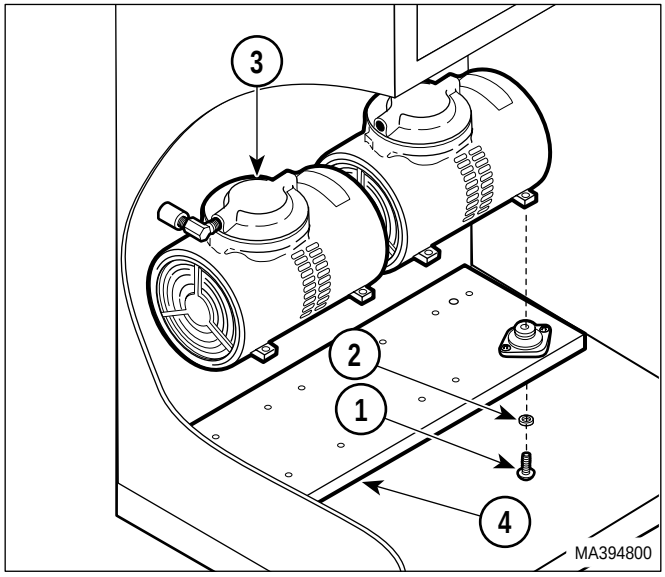

Figure 4-15. Vacuum Pump Assembly Removal / Installation

B. Installation

(1) Position vacuum pump assembly (3, Figure 4-15) on motor mount (4) and secure with four lockwashers (2) and screws (1).

(2) Position motor mount (12, Figure 4-14) on cabinet weldment (4) and secure with two washers (11) and screws (10).

(3) Coat threads of elbows (5 and 8) and exhaust silencer (7) with pipe thread sealant.

(4) Install elbow (8) and exhaust silencer (7) on vacuum pump assembly (9).

(5) Install elbow (5) on vacuum pump assembly (9).

(6) Push end of tube (6) firmly into release ring of elbow (5).

(7) Install motor cover (2) under two flaps (B) on cabinet weldment (4) and secure with two finger screws (3).

(8) Install vacuum bottle (1) in motor cover (2).

(9) Push wire harness (8, Figure 4-13) up through wire hole in cabinet weldment (7).

(10) Install strain relief bushing (6) around wire harness (8), and then insert strain relief bushing in wire hole of cabinet weldment (7).

(11) Install wire (4) on ground stud (5) and secure with nut (3).

(12) Connect two wires (1) to terminal block (2).

(13) Install control box cover (Refer to para 4.1).

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SECTION V
SCHEMATICS AND DIAGRAMS

5.1 Electrical Schematic / Wiring Diagram

Figures 5-1 illustrates the logic/current flow and the wiring connections between the electrical components in the unit.

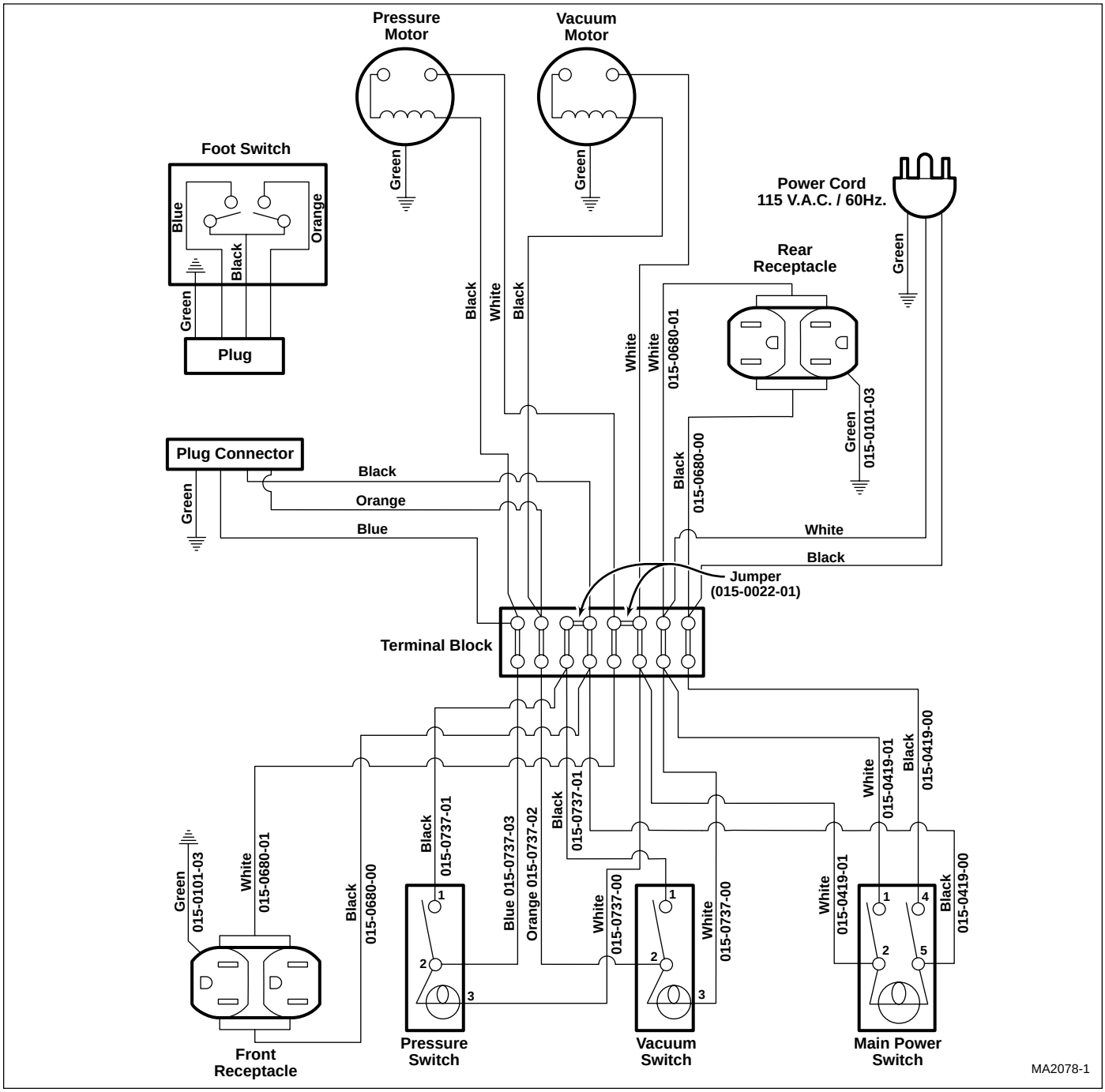

Figure 5-1. Electrical Schematic / Wiring Diagram

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SECTION VI
PARTS LIST

6.1 Introduction

The illustrated parts list provides information for identifying and ordering the parts necessary to maintain the unit in peak operating condition. Refer to paragraph 1.5 for parts ordering information.

The parts list also illustrates disassembly and assembly relationships of parts.

6.2 Description of Columns

The *Item* column of the parts list gives a component its own unique number. The same number is given to the component in the parts illustration. This allows a part number of a component to be found if the technician can visually spot the part on the illustration. The technician simply finds the component in question on the illustration and notes the item number of that component. Then, he finds that item number in the parts list. The row corresponding to the item number gives the technician the part number, a description of the component, and quantity of parts per subassembly. Also, if a part number is known, the location of that component can be determined by looking for the item number of the component on the illustration.

The *Part No.* column lists the MIDMARK part number for that component.

The *Description* column provides a physical description of the component.

The *Qty.* column lists the number of units of a particular component that is required for the subassembly. The letters “AR” denote “as required” when quantities of a particular component cannot be determined, such as: adhesive.

Bullets [•] in the *Part No.* column and the *Description* column show the indenture level of a component. If a component does not have a bullet, it is a main component of that illustration. If a component has a bullet, it is a subcomponent of the next component listed higher in the parts list than itself that does not have a bullet. Likewise, if a component has two bullets, it is a subcomponent of the next component listed higher in the parts list than itself that has only one bullet.

6.3 Torque Specifications and Important Assembly Notes

When specific assembly torque specifications, measurements, or procedures have been identified, by our engineering department, as required to assure proper function of the unit, those torque specifications measurements, and procedures will be noted on the parts illustrations. Adherence to these requirements is essential.

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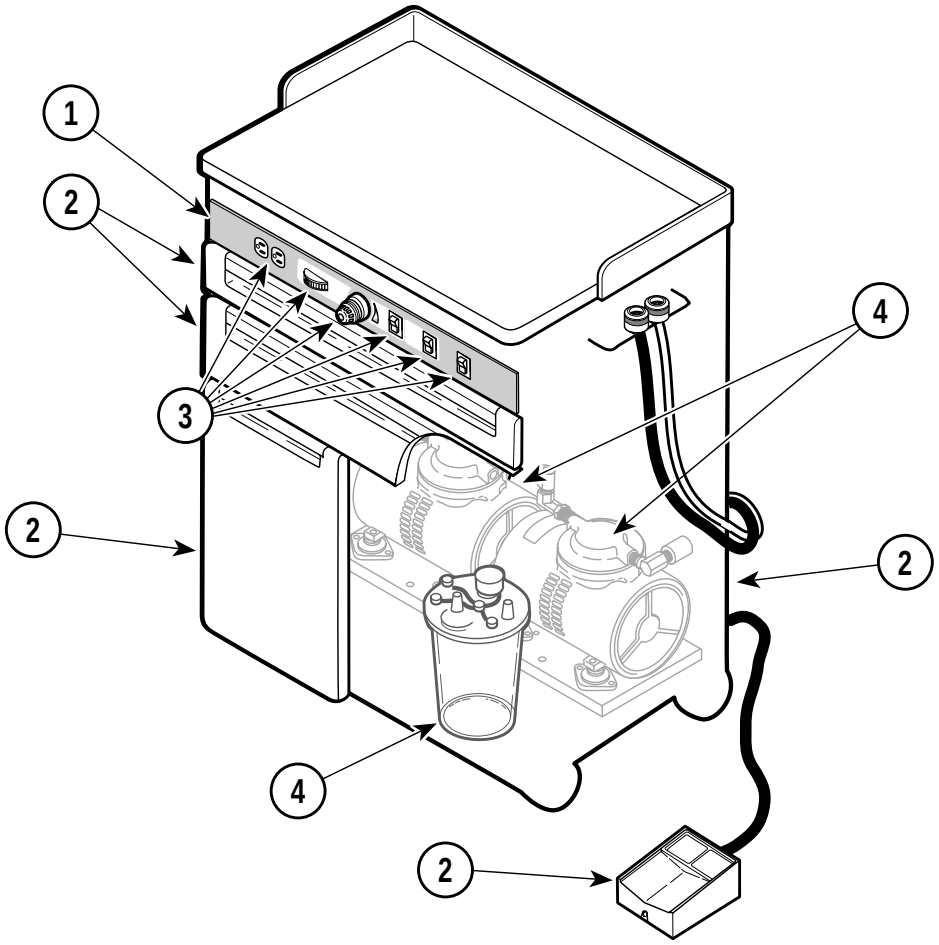
Pictorial Index



MA392600

Item	Part No.	Description	Page
	398-001	Treatment Cabinet (Includes Items 1 thru 4)	Ref
1	•	• Labels and Decals	6-3

Item	Part No.	Description	Qty.
2	•	• Cabinet Assembly	6-4
3	•	• Control Panels Assembly	6-5
4	•	• Pneumatic System	6-6

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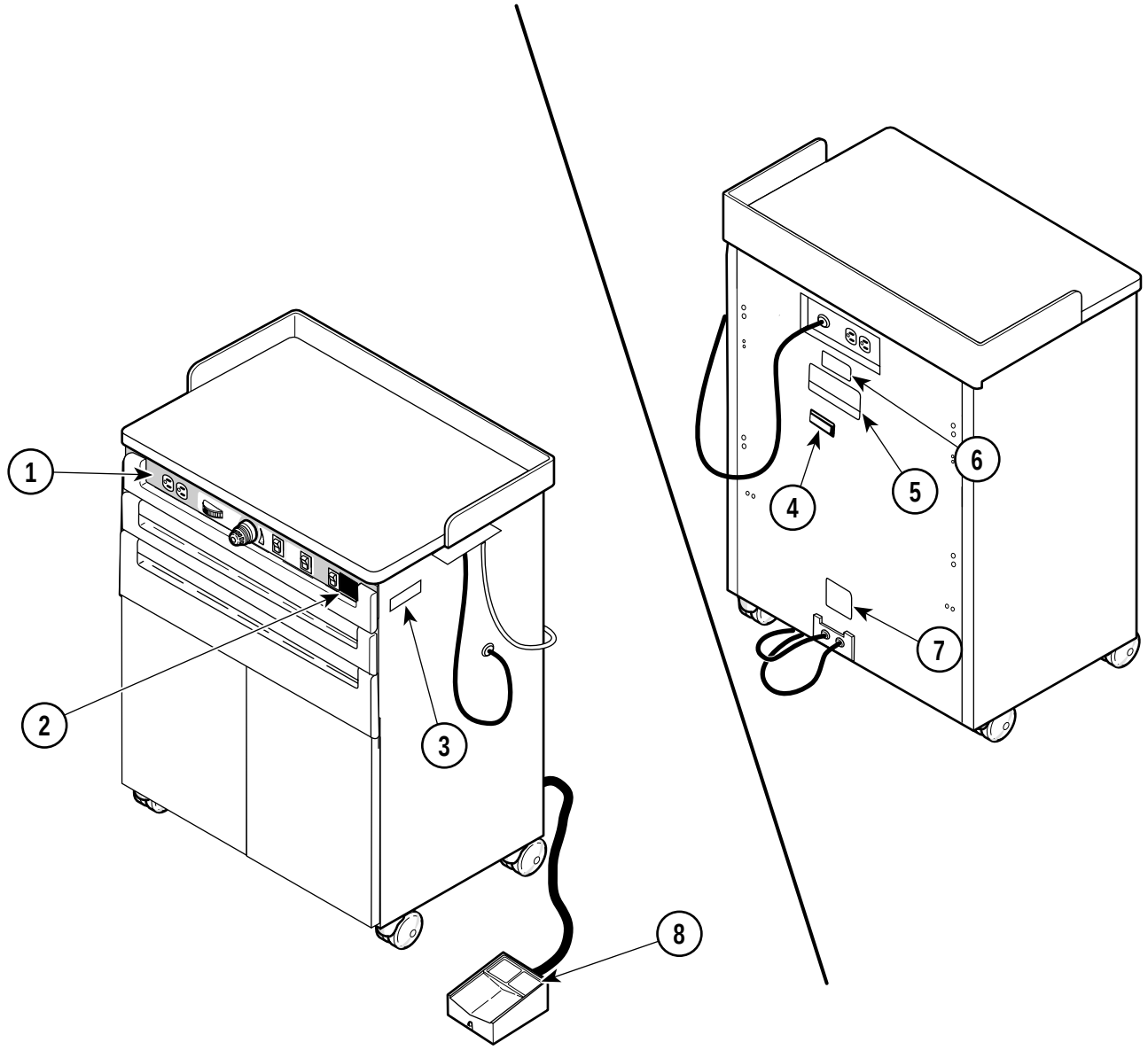
Label and Decals



MA392700

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	061-0422-00	Control Decal	1	5	061-0380-00	Receptacle Label	1
2	061-0668-00	Model Label	1	6	061-0033-00	Caution Label	1
3	061-0293-01	Danger Label	1	7	061-0295-00	Cord Tag	1
4		Serial Number	1	8	061-0147-00	Footswitch Label	1

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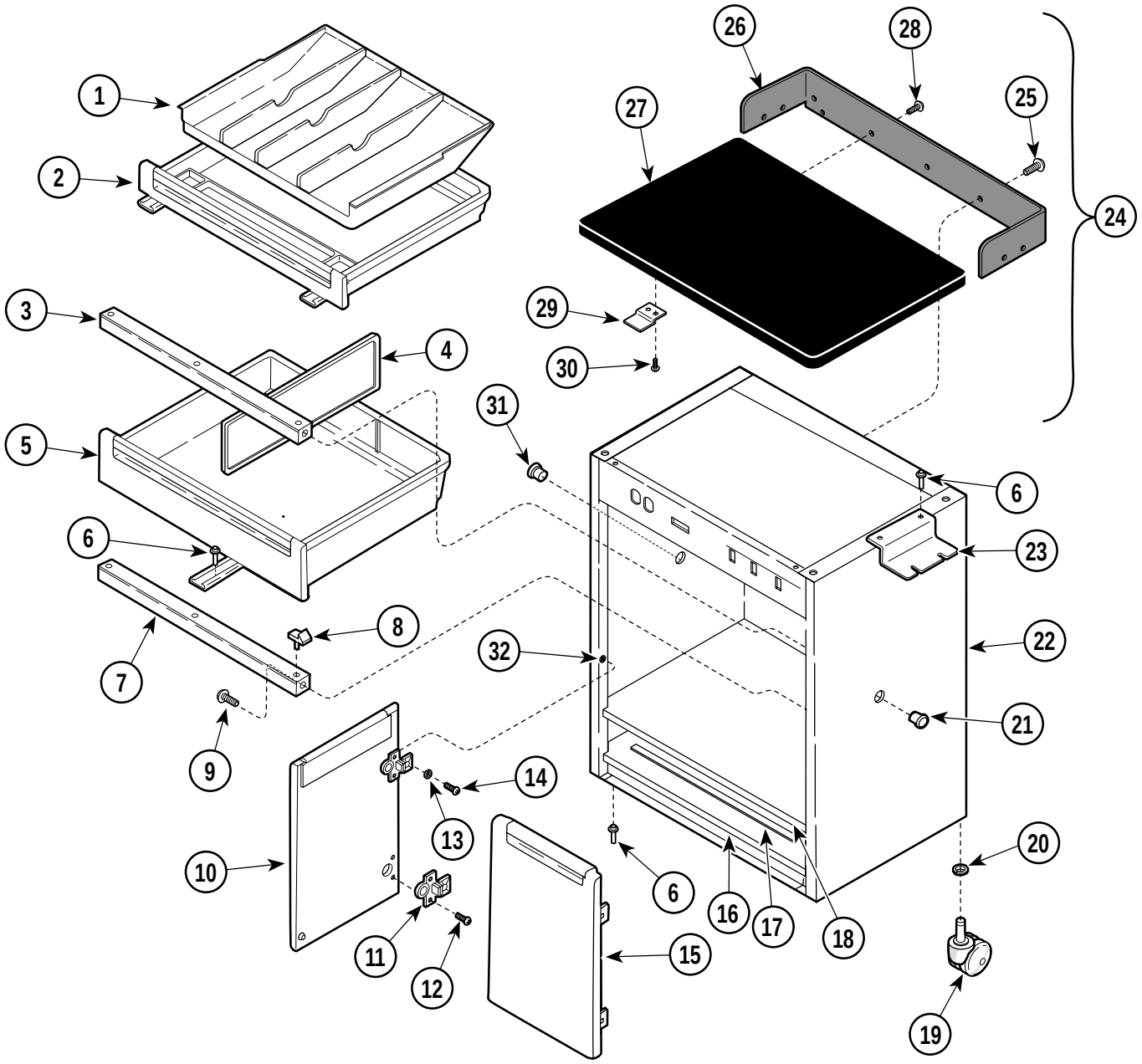
Cabinet Assembly



MA392800

Item	Part No.	Description	Qty.
1	053-0456-00	Drawer Divider	1
2	029-0608-00	Small Drawer Assembly	1
3	050-2109-10	Cabinet Mullion	1
4	053-0012-01	Drawer Divider	3
5	029-0609-00	Large Drawer Assembly	1
6	042-0010-04	Pop Rivet	17
7	050-1631-10	Cabinet Mullion	1
8	053-0004-00	Drawer Glide	4
9	040-0010-35	Screw	4
10	029-0607-04	L.H. Door Assembly (Incl. Hinges)	1
11	016-0328-00	Hinge	4
12	040-0006-40	Screw	8
13	045-0001-08	Lockwasher	4
14	040-0010-12	Screw	4
15	029-0607-05	R.H. Door Assembly (Incl. Hinges)	1
16	050-2705-10	Cabinet Bottom	1
17	042-0075-03	Double Faced Tape	20"
18	029-1399-00	Base Motor Mount	1
19	016-0420-00	Twin Wheel Caster	4
20	045-0001-27	Lockwasher	4
21	053-0068-10	Snap Bushing	1
22	030-0767-10	Cabinet Weldment	1
23	050-2018-10	Hose Bracket	1
24	029-2146-00	Cabinet Top Assembly (Includes Items 25 thru 30)	1
25	• 040-0010-47	• Screw	6
26	• 050-1973-02	• Back Splash	1
27	• 055-0225-00	• Black Cabinet Top	1
28	• 040-0006-51	• Screw	9
29	• 050-3988-10	• Bracket	2
30	• 040-0010-100	• Screw	4
31	053-0050-00	Hole Plug	1
32	042-0045-01	Nutsert	4

Always Specify Model & Serial Number

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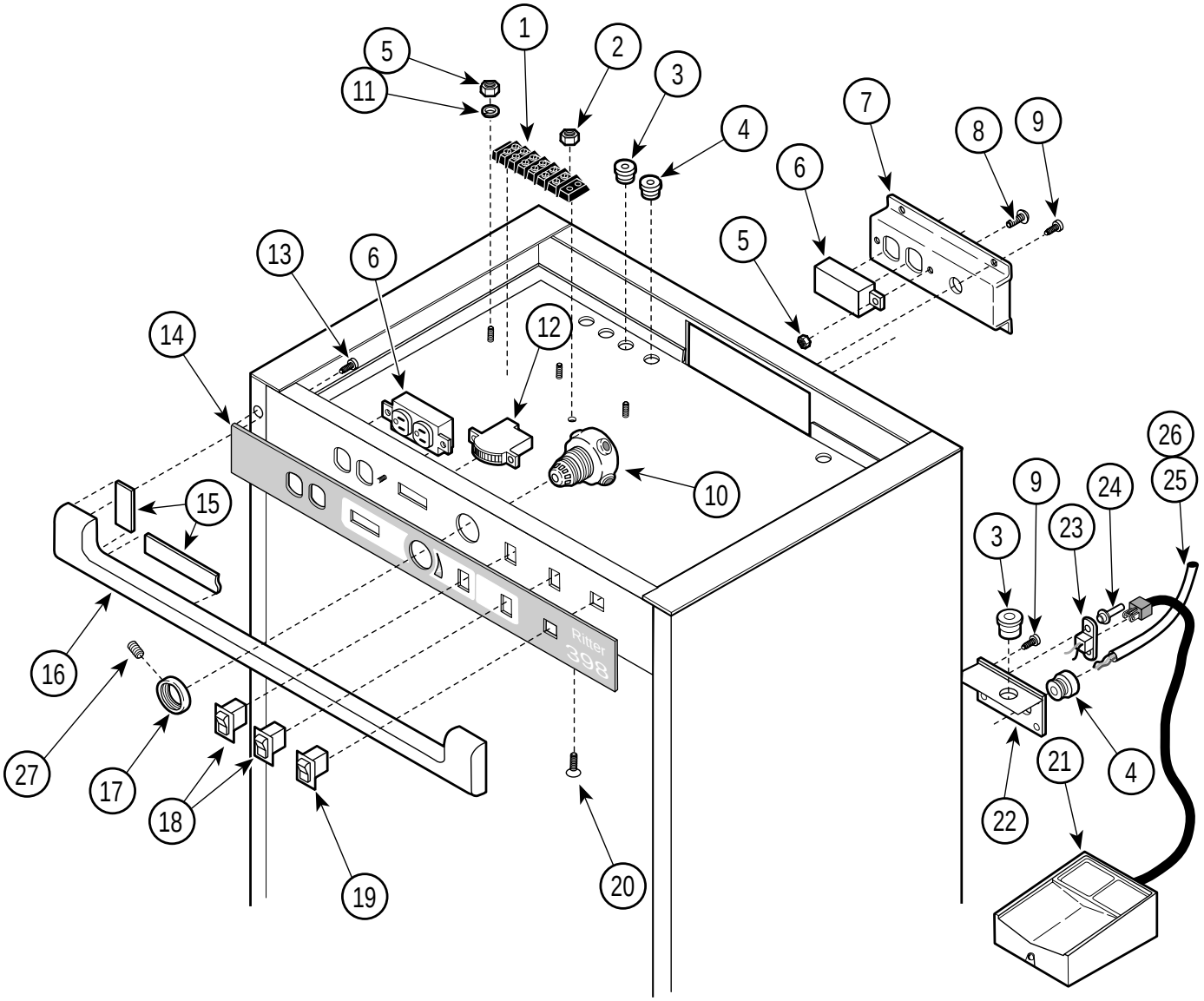
Control Panel Assembly



MA392901

Item	Part No.	Description	Qty.
1	015-0009-00	Terminal Block	1
2	041-0006-00	Nut	2
3	015-0002-00	Strain Relief Bushing	4
4	015-0002-01	Strain Relief Bushing	2
5	041-0008-00	Nut	9
6	015-0083-01	Duplex Receptacle	2
7	050-2019-10	Receptacle Panel	1
8	040-0008-06	Screw	2
9	040-0010-47	Screw	8
10	014-0157-00	Regulator	1
11	045-0001-31	Lockwasher	3
12	014-0225-00	Pressure Gauge	1
13	040-0010-100	Screw	2
14		Control Decal (Refer to Labels and Decals" Elsewhere)	1
15	042-0075-03	Double Sided Tape	AR
16	055-7202-00	Small Drawer Front	1
17	042-0053-01	Panel Mount Nut	1
18	015-0730-00	Rocker Switch	2
19	015-0822-00	Rocker Switch	1
20	040-0006-28	Screw	2
21	015-0417-00	Foot Switch	1
22	050-1034-10	Strain Relief Bracket	1
23	015-0821-00	Plug Connector	1
24	042-0100-01	Pop Rivet	2
25	015-0066-02	Power Cord	1
26	061-0034-00	Cord Tag (Refer to "Labels and Decals" Elsewhere	Ref.
27	040-0006-25	Set Screw	1

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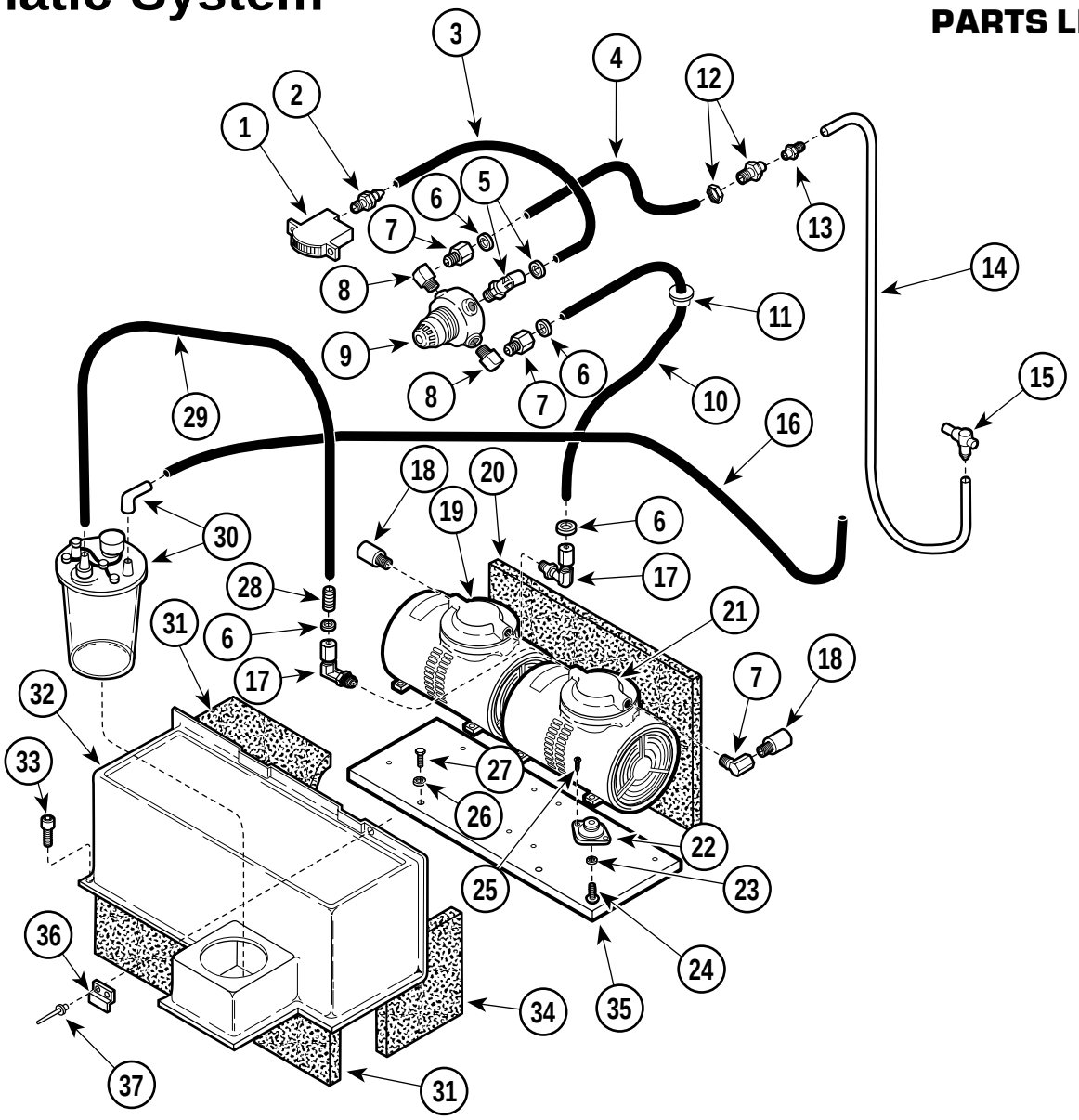
Pneumatic System



MA204300

Item	Part No.	Description	Qty.
1	014-0225-00	Pressure Gauge	1
2	014-0223-00	Connector	1
3	053-0448-00	Black Plastic Tubing (sold in feet)	1
4	053-0178-00	Black Plastic Tubing (sold in feet)	1.5
5	014-0224-00	Elbow Connector	1
6	014-0152-00	Manual Release Button	4
7	014-0151-00	Male Connector	2
8	014-0167-00	Male Elbow	3
9	014-0157-00	Regulator	1
10	053-0178-00	Black Plastic Tubing (sold in feet)	4
11	053-0068-10	Snap Bushing	1
12	014-0163-01	Panel Mount Coupling	1
13	014-0164-00	Hose Barb Insert	1
14	053-0458-00	Clear Poly Tubing (sold in feet)	7.5
15	016-0205-00	Valve	1
16	053-0457-00	Neoprene Tubing	9.25
17	014-0156-01	Male Elbow	2
18	053-0175-00	Exhaust Silencer	2
19	029-1436-00	Pressure Pump Assembly (Domestic)	1
	029-1436-01	Pressure Pump Assembly (Export)	1
20	054-0085-03	Back Sound Damp	1
21	029-1435-00	Vacuum Pump Assembly (Domestic)	1
	029-1435-01	Vacuum Pump Assembly (Export)	1
22	053-0446-00	Bubble Mount	8
23	045-0001-19	Lockwasher	8
24	040-0008-06	Screw	8
25	040-0006-00	Screw	16
26	045-0001-02	Washer	2
27	040-0250-24	Screw	2
28	014-0153-00	Barb Connector	1
29	053-0457-00	Neoprene Tubing (sold in feet)	2
30	053-0447-00	Vacuum Bottle	2
31	054-0168-01	Long Sound Damp	2
32	053-0441-00	Motor Cover	1
33	042-0108-01	Nylon Finger Screw	2
34	054-0168-00	Side Sound Damp	2
35	062-9870-00	Motor Mount	1
36	050-2069-10	Motor Cover Bracket	2
37	042-0010-03	Pop Rivet	4

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COMMENTS

The Technical Publications Department of Midmark Corporation takes pride in its publications. We are sure that our manuals will fill all of your needs when you are performing scheduled maintenance, servicing, or repairs on a Midmark product.

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FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:30 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT **OTHER** _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

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